Local contexts in ellipsis

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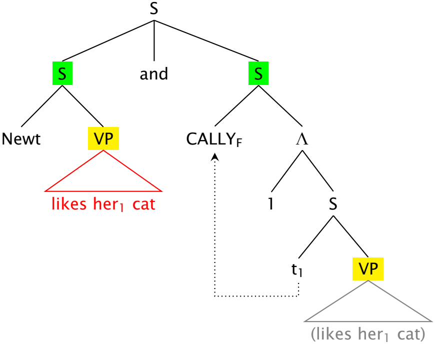
This talk is about building a better theory of ellipsis (and deaccenting).

Identity and **congruence** seem to play a central role, but our best accounts of these relations are complex, stipulative in a way that suggests something's being missed.

The trouble-makers, as ever, are **bound variables**. How should identity and congruence deal with bound variables that aren't *yet* bound?


S
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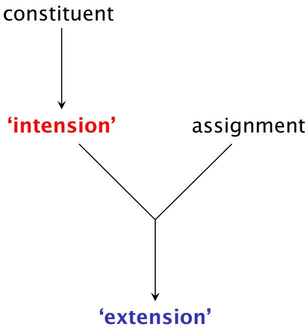
constituent
'intension'
assignment
'extension'

Here are my principal conclusions:

- Focus alternatives are **intensions**
- Yet parallelism relates **extensions**
- Parallelism is checked in a **local context**

Upshot: indices matter less for ellipsis and deaccenting than thought. They fix values for variables. But it's the *values* that matter in the end (Jacobson 2009).

- This dissolves puzzles as old as the ellipsis literature, and helps ground a simpler theory of ellipsis based on identity alone.
- Sheds new light on impossible ACDs, mysterious focused bound pronouns.

Background

Ambiguity doesn't multiply in ellipsis (or deaccenting):

(1) Al saw an elk with my glasses. Did YOU$_F$ (see an elk with my glasses)?

(2) Al told a story to everyone, but YOU$_F$ DIDN'T$_F$ (tell a story to everyone).

(3) I saw her, but YOU$_F$ DIDN'T$_F$ (see her).

Reduction of *E* licensed via identity or parallelism with *A*.

A certain class of **sloppy** readings, though posing a prima facie challenge to a strict identity-based theory of ellipsis licensing, are in fact not difficult to accommodate:

(4) Mary$_i$ likes her$_i$ office, but SUE$_{F,j}$ DOESN'T$_F$ (like her$_j$ office).

Sag, e.g., characterized the *A* and *E* phrases here as 'alphabetic variants', an identity relation based on the λ-calculus notion of α-equivalence (though distinct).

Keenan (1971), Sag (1976), Williams (1977).

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(4) Mary [λ_i t$_i$ likes her$_i$ office], but SUE$_F$ DOESN'T$_F$ (λ_j t$_j$ like her$_j$ office).

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Contra Sag, sloppy pronouns don't need to be bound inside *E* ('**rebinding**'):

(5) Bagels$_i$ [I like t$_i$]. DONUTS$_{F,j}$ [I DON'T$_F$ (like t$_j$)].

(6) Every patient$_i$ [an MD saw t$_i$]. (Every patient$_j$) [an RN$_F$ did (see t$_j$)] too.

(7) Every dog$_i$ thinks I like it$_i$. Every CAT$_{F,j}$ thinks I DON'T$_F$ (like it$_j$).

(8) John$_i$'s mom likes him$_i$. BILL$_{F,j}$'s mom DOESN'T$_F$ (like him$_j$).

(9) If I see a cat$_i$ I pet it$_i$. If I see a DOG$_{F,j}$ I DON'T$_F$ (pet it$_j$).

Not just ellipsis. Same range of interpretations available under deaccenting.

See Hirschbühler 1982, Evans 1988, Jacobson 1992, Rooth 1992b, Hardt 1993, Fiengo & May 1994, Tomioka 1999, Takahashi & Fox 2005, and many others.

Two-part theory of ellipsis licensing (Rooth 1992b)

Ellipsis is licensed whenever the following two conditions are satisfied:

- Syntactic: $A \approx E$ — Syntactic identity **up to variable names**
- Semantic: $\Gamma[A] \cong \Delta[E]$ — *A* and *E* are in **congruent** structures

Only the syntactic condition is specific to ellipsis. Congruence is enforced by GIVENness, focus interpretation, discourse relations, ...

$$\Gamma \cong \Delta \iff [\![\Gamma]\!] \in [\![\Delta]\!]_{f} \wedge \underbrace{[\![\Gamma]\!] \neq [\![\Delta]\!]}_{\text{Contrast}}$$

With $[\![\Delta]\!]_{f}$ the alternative set generated by varying F-marked things in Δ. E.g., $[\![\text{AL}_F \text{ left}]\!]_{f} = \{\text{left}\, x \mid x : \mathrm{e}\}$ (Hamblin 1973, Rooth 1985, 1992a, Kratzer 1991).

$\text{John}_1\ [t_1\ \text{likes his}_1\ \text{mom}] \cong \text{BILL}_{F,2}\ [t_2\ \text{does (like his}_2\ \text{mom)}]$

$$\text{likes}\,(\text{mom}\,j)\,j \quad \in \quad \{\text{likes}\,(\text{mom}\,x)\,x \mid x : e\}$$

$\text{John}_1\ [t_1\ \text{mom likes him}_1] \cong \text{BILL}_{F,2}\ [t_2\ \text{mom does (like him}_2\text{)}]$

$$\text{likes}\,j\,(\text{mom}\,j) \quad \in \quad \{\text{likes}\,x\,(\text{mom}\,x) \mid x : e\}$$

Binding results in **covarying** focus alternatives, which allows the antecedent and elliptical clauses to be congruent (indeed, the smallest such nodes).

In general, the interaction of binding and alternatives creates complications (Poesio 1996, Shan 2004, Romero & Novel 2013, Charlow 2018). This won't affect any of the points in the talk.

Hard to oversell how successful, illuminating this approach has been. Congruence is a principle of grammar not specific to ellipsis (Schwarzschild 1999, Büring 2016, cf. Tancredi 1992, Fox 1999).

It must be admitted that the syntactic condition is a bummer (cf. Merchant 2001).

Something akin to congruence is present even in dissenters from the overall Roothian picture (e.g., Merchant 2001, Kehler 2000, building on Hobbs 1979).

Why not just coindex the sloppy pronoun and its correlate in *A*?

$$\text{John}_1\ [t_1\ \text{likes his}_1\ \text{mom}] \cong \text{BILL}_{F,1}\ [t_1\ \text{does (like his}_1\ \text{mom)}]$$

$$\text{likes}\,(\text{mom}\,j)\,j \quad \in \quad \{\text{likes}\,(\text{mom}\,x)\,x \mid x : e\}$$

Actually, this needs to be *ruled out* since it massively over-generates:

(10) #Newt $\underbrace{\text{likes her}_1\ \text{cat}}$ and CALLY_F [1 t_1 does $\underbrace{\text{(like her}_1\ \text{cat)}}$] too.

(11) #Newt $\underbrace{\text{wants me to cite her}_1}$ and CALLY_F [1 t_1 $\underbrace{\text{wants YOU}_F\ \text{to (cite her}_1\text{)}}$].

(12) #Cally [1 t_1 said $\underbrace{\text{she}_1\ \text{left}}$] but $\underbrace{\text{she}_1\ \text{DIDN'T}_F\ \text{(leave)}}$.

This is the reason Sag's sense of 'alphabetic variance' isn't the version from λ-calculus.

No Meaningless Coindexing (NMC) (Heim 1997: 202)

If an LF contains an occurrence of a variable v that is bound by a node α, then all occurrences of v in this LF must be bound by the same node α.

Correctly rules out (13) (assuming it counts as an LF):

(13) John wants me to cite $\underset{***}{\text{him}_1}$. BILL_F [$\underset{\checkmark}{1}$ $\underset{\checkmark}{t_1}$ wants YOU_F to (cite $\underset{\checkmark}{\text{him}_1}$)].

Aside from Sag 1976 (and followers), see Tomioka 1995, Sauerland 1998, 2004, Kennedy 2004, 2014, Takahashi & Fox 2005, Takahashi 2006, Hartman 2011, Roelofsen 2011, Crnič 2017.

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(14) If I see a $\underset{\checkmark}{\text{cat}_1}$ I pet $\underset{\checkmark}{\text{it}_1}$. But JOHN$_F$ DIDN'T$_F$ (pet $\underset{***}{\text{it}_1}$).

Defining the relevant sense of binding may turn out to be complex.

Aside from Sag 1976 (and followers), see Tomioka 1995, Sauerland 1998, 2004, Kennedy 2004, 2014, Takahashi & Fox 2005, Takahashi 2006, Hartman 2011, Roelofsen 2011, Crnič 2017.

$\widetilde{\text{Semantics}}$

Our $\cong$ definition doesn't mention assignments. No big in previous examples since all variables are bound. But what if Γ and Δ have *unbound* variables?

$$\Gamma \cong \Delta \iff \forall g : [\![\Gamma]\!]^g \in [\![\Delta]\!]^g_f \wedge \underbrace{[\![\Gamma]\!]^g \neq [\![\Delta]\!]^g}_{\text{Contrast}}$$

Authors who are explicit generally use Heim's definition (exceptions: Schwarzschild 1999: 152, possibly Merchant 2001). Occasionally $\exists g$ is entertained (cf. Tomioka 2008, Griffiths 2018).

Suppose the context serves up the following small assignment:

a	b	a

$\cong$ sees indexical differences, even when those differences are blurred in a context:

(15) I saw her$_{\underline{1}}$ but YOU$_F$ DIDN'T$_F$ (see her$_{\underline{1}}$).

(16) I saw her$_{\underline{1}}$ but YOU$_F$ DIDN'T$_F$ (see her$_{\underline{2}}$).

(17) I saw her$_{\underline{1}}$ but YOU$_F$ DIDN'T$_F$ (see her$_{\underline{3}}$).

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a	b	a

$\cong$ sees indexical differences, even when those differences are blurred in a context:

(15) I saw her$_{\underline{1}}$ but YOU$_F$ DIDN'T$_F$ (see her$_{\underline{1}}$). ✓

(16) I saw her$_{\underline{1}}$ but YOU$_F$ DIDN'T$_F$ (see her$_{\underline{2}}$). #

(17) I saw her$_{\underline{1}}$ but YOU$_F$ DIDN'T$_F$ (see her$_{\underline{3}}$). #

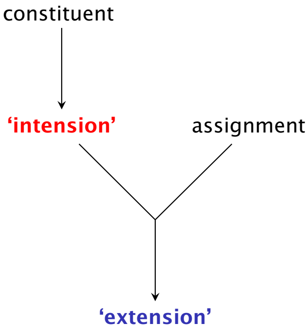
In contexts like | a | b | a | *she₃* in (18) is always given, never new/in contrast.

(18) {Anne, she_1} praised Caesar. #No, $SHE_{F,3}$ praised him.
No, she_3 $BURIED_F$ him.

Yet there are many g where $[\![\text{Anne}]\!]^g \neq [\![\text{she}_3]\!]^g$, and where $[\![\text{she}_1]\!]^g \neq [\![\text{she}_3]\!]^g$.

- Possible reply to Anne $\cong$ she_3: names are variables.
- Possible reply to $she_1 \cong she_3$: prohibit Redundancy (Schlenker 2005).

We sometimes individuate things in super fine-grained ways (Heim 1998, Aloni 2001), which may allow focus in these kinds of cases. Interestingly, such contexts may allow for BT violations *and* destressing.


constituent
‘intension’
assignment
‘extension’

For our purposes, meanings are not characters (Kaplan 1990) but rather whatever is determined by the character in the context. This entails that anaphora and ambiguity resolution precedes matching. If the character of a particular term determines a referent in a context, then for our purposes its meaning is its referent. All pronouns in the examples we will study fit into this category. Schwarzschild (1997: 7)

See also Schwarzschild (1999: 152ff), Jacobson (2009: 96).

Here is a proposal implementing the spirit of this analysis:

$$\Gamma \cong \Delta \text{ at } g \iff [\![\Gamma]\!]^g \in [\![\Delta]\!]^g_{\mathsf{f}} \wedge \underbrace{[\![\Gamma]\!]^g \neq [\![\Delta]\!]^g}_{\text{Contrast}}$$

This gives the right results for the previous case, with $g = \boxed{a \mid b \mid a}$:

(19) {Anne, she_1} praised Caesar. #No, $\text{SHE}_{\text{F},3}$ praised him.
No, she_3 BURIED_F him.

But both $\cong_\forall$ and $\cong_\iota$ result in **unbinding variables**, whence bad NMC predictions:

(20) Newt $\underbrace{\text{likes her}_1\ \text{cat}}$ and CALLY$_F$ [1 t$_1$ does $\underbrace{\text{(like her}_1\ \text{cat)}}$] too.

$\text{like}\,(\text{cat}\, g_1) \in \{\text{like}\,(\text{cat}\, g_1)\}$

(21) Newt $\underbrace{\text{wants me to cite her}_1}$ and CALLY$_F$ [1 t$_1$ $\underbrace{\text{wants YOU}_F\ \text{to (cite her}_1)}$].

$\text{want}\,(\text{cite}\, g_1\, \text{s}) \in \{\text{want}\,(\text{cite}\, g_1\, x) \mid x : \text{e}\}$

(22) Cally [1 t$_1$ said $\underbrace{\text{she}_1\ \text{left}}$] but $\underbrace{\text{she}_1\ \text{DIDN'T}_F\ \text{(leave)}}$.

$\text{left}\, g_1 \in \{f\,(\text{left}\, g_1) \mid f : \text{t} \to \text{t}\}$

Discomfiting: bound variables *have values in local contexts* (though from the 'outside' the idea that they have values may seem strange, cf. Fine 2003).

Presuppositions, including ‘bound-into’ cases, are checked in *local contexts*:

(23) If there’s an escalator in 18SEM, the escalator in 18SEM is hidden.

(24) Each of these students$_i$ brought their$_i$ laptop.

If the congruence constraint was a kind of presupposition (as has often been proposed), it would be surprising if it was not also checked ‘in situ’.

Consider what's implied by NMC and prohibitions on redundancy:

- NMC: multiple referents imply multiple indices
- No redundancy: multiple indices imply multiple referents

Together this entails that indices are in 1-1 correspondence with referents. But then why are foregrounding the indices, if it's the referents that matter?

According to a natural extension of the ‘original’ theory of congruence and contrast (Rooth 1992a), it’s impossible for $\sim$ to ‘see’ indices.

Rooth's (1992a) squiggle 'interprets focus' in situ, requiring its associate α to be congruent with the value of a variable n:

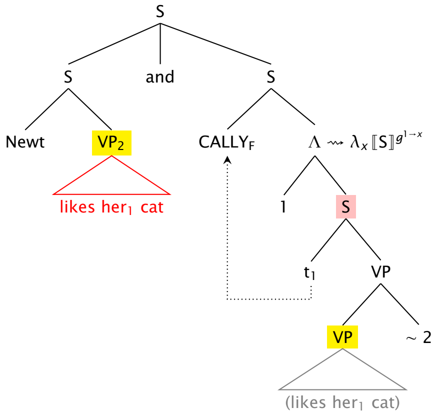
$$[\![\alpha \sim n]\!]^g := \begin{cases} [\![\alpha]\!]^g \text{ if } g_n \in [\![\alpha]\!]^g_{\mathsf{f}} \wedge g_n \neq [\![\alpha]\!]^g \\ \text{undefined otherwise} \end{cases}$$

Cf. $\cong_\iota$, which pulls Γ and Δ out of their local context, unbinding bound variables:

$$\Gamma \cong \Delta \text{ at } g \iff [\![\Gamma]\!]^g \in [\![\Delta]\!]^g_{\mathsf{f}} \wedge \underbrace{[\![\Gamma]\!]^g \neq [\![\Delta]\!]^g}_{\text{Contrast}}$$

If g is modified as $[\![\cdot]\!]$ descends, $\sim$ will be evaluated *at that modified assignment*. But $\cong_\iota$ is evaluated once and for all at some definite g.

I'm adopting a semantic theory of alternatives for concreteness, but my points apply equally to syntactic theories of alternatives (Katzir 2007, Fox & Katzir 2011).



m	likes (cat m)	$\longmapsto$	c	likes (cat m)	{likes (cat c)}

John [wants me to cite $\text{him}_1]_2$

$$\rightsquigarrow$$

$$
\begin{aligned}
& [\![\text{BILL}_F\ [1\ t_1\ [\text{wants YOU}_F \text{ to } (\text{cite him}_1)] \sim 2]]\!]^g && \\
&= [\![1\ t_1\ [\text{wants YOU}_F \text{ to } (\text{cite him}_1)] \sim 2]\!]^g\, \text{b} && \text{FA} \\
&= (\lambda_x [\![t_1\ [\text{wants YOU}_F \text{ to } (\text{cite him}_1)] \sim 2]\!]^{g^{1 \mapsto x}})\, \text{b} && \text{PA} \\
&= [\![t_1\ [\text{wants YOU}_F \text{ to } (\text{cite him}_1)] \sim 2]\!]^{g^{1 \mapsto \text{b}}} && \equiv_\beta \\
&= (\underbrace{[\![[\text{wants YOU}_F \text{ to } (\text{cite him}_1)] \sim 2]\!]^{g^{1 \mapsto \text{b}}}}_{\text{Is this defined?}})\, \text{b} && \text{FA}
\end{aligned}
$$

John [wants me to cite $\text{him}_1]_2$

$$
\begin{aligned}
(g^{1\mapsto b})_2 &\in [\![\text{wants YOU}_F \text{ to (cite him}_1)]\!]_f^{g^{1\mapsto b}} && \sim \\
\Leftrightarrow \text{wants}(\text{cite}(s, a)) &\in [\![\text{wants YOU}_F \text{ to (cite him}_1)]\!]_f^{g^{1\mapsto b}} && \text{Ass.} \\
\Leftrightarrow \text{wants}(\text{cite}(s, \underline{a})) &\in \{\text{wants}(\text{cite}(x, \underline{b})) \mid x : e\} && [\![\cdot]\!]_f \\
\Leftrightarrow \bot & && \square
\end{aligned}
$$

The following sentences are intuitively in contrast (Schwarzschild 1993):

(25) [No monkey$_1$ hit itself$_1$]$_2$. [EVERY$_F$ monkey$_3$ hit [the INSTRUCTOR]$_F$] $\sim$ 2.

- So $[\![\cdot]\!]_f$ contains bindable *intensions* (as in Rooth 1985)
- Yet $\sim$'s presuppositions are assessed *extensionally*

Schwarzschild (pp. 17ff) considered these two points in...tension and later (1997, 1999) developed a theory modeling the latter (but not the former).

$$[\![\alpha\ \beta]\!]^g = \mathcal{O}([\![\alpha]\!]^g, [\![\beta]\!]^g)$$

$$[\![\alpha\ \beta]\!]^g_{\mathsf{f}} = \{\mathcal{O}(a, b) \mid a \in [\![\alpha]\!]^g_{\mathsf{f}}, b \in [\![\beta]\!]^g_{\mathsf{f}}\}$$

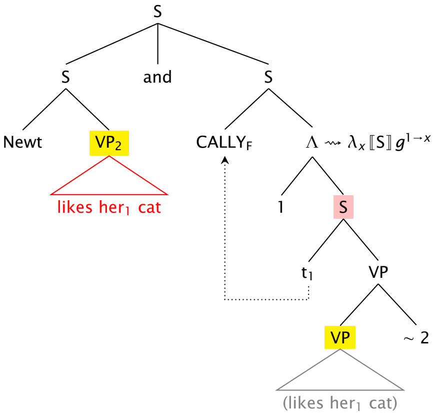
$$[\![\alpha\ \beta]\!] = \lambda_g \mathcal{O}([\![\alpha]\!]g, [\![\beta]\!]g)$$

$$[\![\alpha\ \beta]\!]_{\mathsf{f}} = \{\lambda_g \mathcal{O}(ag, bg) \mid a \in [\![\alpha]\!]_{\mathsf{f}}, b \in [\![\beta]\!]_{\mathsf{f}}\}$$

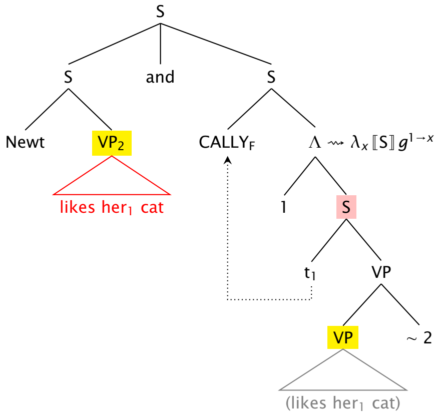
Rooth 1985, Schwarzschild 1993, Poesio 1996, Romero & Novel 2013

$$[\![\alpha \sim n]\!]^g := \begin{cases} [\![\alpha]\!]^g \text{ if } g_n \in [\![\alpha]\!]^g_{\mathsf{f}} \wedge g_n \neq [\![\alpha]\!]^g \\ \text{undefined otherwise} \end{cases}$$

$$[\![\alpha \sim n]\!]\, g := \begin{cases} [\![\alpha]\!]\, g \text{ if } g_n \in \{m\, g \mid m \in [\![\alpha]\!]_{\mathsf{f}}\} \wedge g_n \neq [\![\alpha]\!]\, g \\ \text{undefined otherwise} \end{cases}$$



$\boxed{\mathrm{m} \mid \mathrm{likes}\,(\mathrm{cat}\,\mathrm{m})} \longmapsto \boxed{\mathrm{c} \mid \mathrm{likes}\,(\mathrm{cat}\,\mathrm{m})} \; \boxed{\{\lambda_g \,\mathrm{likes}\,(\mathrm{cat}\, g_1)\}}$



m	likes (cat m)	$\longmapsto$	c	likes (cat m)	{likes (cat c)}

Binding

What does it mean for the antecedent A of $\sim n$ to be subscripted, A_n?

This could either indicate that A_n binds $\sim n$, or that the two are merely coreferential.

Treating $\sim n$ extensionally speaks in favor of *binding*.

Intuitively the two conjuncts below are in contrast:

(26) Every boy_1 claimed that [Mary likes $\text{him}_1]_2$ and [SUE_F likes $\text{him}_1] \sim 2$.

Yet this is actually impossible to satisfy if we assume that the relationship between $\sim$ and its 'antecedent' is modeled in terms of simple coreference.

That requires there to be a contextually determined value for 2 such that:

$$\forall x \in \text{boy} : g_2 \in \{\text{like}(y, x) \mid \ldots\}$$

The focus sets vary boy-by-boy! No single value for g_2 can do all this work.

What *does* work: allowing *Mary likes him*$_1$ to **semantically bind** ~ 2.

(27) Every boy$_1$ claimed that [Mary likes him$_1$]$_2$ and [SUE$_F$ likes him$_1$] ~ 2.

In that event, the value associated with ~ 2 is not determined once and for all by the context, but shifts as *every boy* churns through its domain.

$$\forall x \in \text{boy} : \text{likes}\,(\text{m}, x) \in \{\text{likes}\,(y, x) \mid x : \text{e}\}$$

Congruence is often described as *anaphoric* (including by Rooth and Schwarzschild). Treating $\sim$ extensionally and in situ requires us to take this seriously.

a	$\text{likes}(\text{m}, \text{a})$	$\{\lambda_g \text{likes}(x, g_1) \mid x : \text{e}\}$	✓
b	$\text{likes}(\text{m}, \text{b})$	$\{\lambda_g \text{likes}(x, g_1) \mid x : \text{e}\}$	✓
c	$\text{likes}(\text{m}, \text{c})$	$\{\lambda_g \text{likes}(x, g_1) \mid x : \text{e}\}$	✓

a	likes(m, a)	{likes(x, a) | x : e}	✓
b	likes(m, b)	{likes(x, b) | x : e}	✓
c	likes(m, c)	{likes(x, c) | x : e}	✓

The occurrences of $\sim$ in (28) and (29) are functioning as *donkey pro-forms*.

(28) If [a cat$_6$ [Mary likes t$_6$]$_5$] you can bet that [SUE$_F$ LOVES$_F$ it$_6$] $\sim$ 5

(29) Whenever [[the copier or the fax]$_7$ [you use t$_7$]$_8$] [I$_F$ CAN'T$_F$ (use it$_7$)] $\sim$ 8

$\sim$ participates in the same rich range of binding configs as pronouns (Partee 1973).

Rooth & Partee 1982, Stone 1992, Fiengo & May 1994, Charlow 2012

On the other hand, whereas binding seems sensitive to linearity (roughly), it's well known that $\sim$ satisfaction can be cataphoric (Rooth 1992a):

(30) An AMERICAN$_F$ farmer was talking to a CANADIAN$_F$ farmer.

As argued by Brasoveanu & Szabolcsi (2013), this suggests that $\sim$ satisfaction can 'post-suppositional', taking place after the sentence meaning has been composed.

(31) A-mo hashitta. 'A ran away too'

(32) A-mo B-mo hashitta. 'A and B ran away'

This interacts in interesting ways with our proposal for $\sim$.

Two extensions

(33) I saw t_i [the man YOU$_F$ did (see t_j)]$_i$.

(34) I saw t_i [a book about the man YOU$_F$ did (*see t_j)]$_i$.

Kennedy 1994, 2004, 2014, Sauerland 1998, 2004, Fox 2002, Jacobson 2000, 2004, 2009.

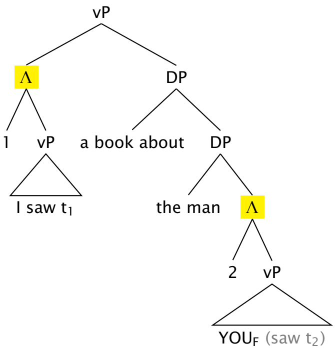
Heim (1997) proposes to explain the data as a failure of $\cong$.

(35) [I saw t_i]$_n$ [the man$_i$ [YOU$_F$ did (see t_i)] $\sim$ *n*].

(36) [I saw t_i]$_n$ [a book$_i$ about the man$_j$ [YOU$_F$ did (*see t_j)] $\sim$ *n*].

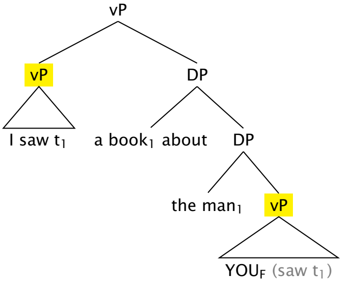
I saw $t_i \ncong$ YOU$_F$ saw t_j, whence the ungrammaticality of (36).

Relies on NMC: without, spurious choices for indices allow $\cong$ to be satisfied.



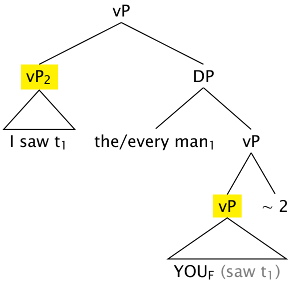
Heim worried ≅ could be satisfied if it targets abstraction nodes (but cf. Shan 2004).

I am quite happy, with Heim, to assume that there *are* no Λ nodes in syntax. And we have already seen that NMC is dispensable with the right implementation of $\sim$.



There is no way for $\sim$ to relate the values of the vPs, even with coindexing: the first has a trace that evaluates to a book; the second has a trace that evaluates to a man.

But how is $\sim$ satisfied in the *good* cases? A configuration like the one below looks good at first, but remember that ~ 2 needs be bound!



But in this LF, the DP binds into vP_2, not vice versa. Scope paradox?

See Koster-Moeller & Hackl 2008 for some of the complexities of using $\sim$ in ACD.

Recall from earlier that $\sim$ satisfaction can be symmetric. As Brasoveanu & Szabolcsi argue, this suggests that $\sim$ satisfaction is post-suppositional.

(37) An AMERICAN$_F$ farmer was talking to a CANADIAN$_F$ farmer.

(38) A-mo B-mo hashitta. 'A and B ran away'

Notably anticipatory stress is common (obligatory?) in ACD:

(39) I$_F$ read everything YOU$_F$ did.

To this I'll add one assumption: that we're using something akin to a dynamic plural logic, which preserves our local contexts after the evaluation of the sentence.

(40) Every boy saw a movie. Some even enjoyed it.

(41) Every boy saw a-RED movie. (Requires multiple movies seen.)

The context post-evaluation reflects the dependency between boys and movies seen.

b_1	m_1
b_2	m_2
b_3	m_3

van den Berg 1996, Nouwen 2003, Brasoveanu 2007, Henderson 2014

$$\underbrace{[\text{John read } t_1]}_{2}\ [\text{everything}^1\ \underbrace{\text{MARY}_F \text{ did (read } t_1)}_{2\sim 3}]$$

a	read(j, a)	$\{\lambda_g \text{read}(x, g_1) \mid x : e\}$
b	read(j, b)	$\{\lambda_g \text{read}(x, g_1) \mid x : e\}$
c	read(j, c)	$\{\lambda_g \text{read}(x, g_1) \mid x : e\}$

There is a question of how $\sim$ should be evaluated here: should it distributively require satisfaction in every row (assignment), or would something weaker be appropriate? The weaker notion could be consistent with the head-identity effects noted by Sauerland (1998, 2004).

$$\underbrace{[\text{John read } t_1]}_{2}\ [\text{everything}^1\ \underbrace{\text{MARY}_F \text{ did } (\text{read } t_1)}_{2\sim 3}]$$

a	read(j, a)	$\{\text{read}(x, \text{a}) \mid x : \text{e}\}$
b	read(j, b)	$\{\text{read}(x, \text{b}) \mid x : \text{e}\}$
c	read(j, c)	$\{\text{read}(x, \text{c}) \mid x : \text{e}\}$

There is a question of how $\sim$ should be evaluated here: should it distributively require satisfaction in every row (assignment), or would something weaker be appropriate? The weaker notion could be consistent with the head-identity effects noted by Sauerland (1998, 2004).

(42) Every third grade boy likes his mom.
And every FOURTH$_F$ grade boy likes his mom.

(43) Every third grade boy likes his mom.
And every FOURTH$_F$ grade boy likes HIS$_F$ mom.

(44) Every third grade boy likes his mom.
And every FOURTH$_F$ grade boy likes her/*HER$_F$.

Sauerland (1998, 2000), Jacobson (2000), Dimitriadis (2001), Mayr (2012). Jacobson's theory treats the *intensions* of the bound pronouns as in contrast. This is problematic: $\sim$ is extensional!

What is the focused bound pronoun contrasting with?

In light of the non-focused variant, why isn’t this overfocusing?

And *what* is going on with the paycheck example?

Every TGB[1] [t_1 likes $\underbrace{\text{his}_1 \text{ mom}}_{2}$]. Every $\text{FGB}_F{}^3$ [t_3 likes $\underbrace{\text{HIS}_{F,3} \text{ mom}}_{2\sim 4}$].

a	mom a	d	$\{\lambda_g \text{mom}\, g_1, \lambda_g \text{mom}\, g_3\}$
b	mom b	e	$\{\lambda_g \text{mom}\, g_1, \lambda_g \text{mom}\, g_3\}$
c	mom c	f	$\{\lambda_g \text{mom}\, g_1, \lambda_g \text{mom}\, g_3\}$
...	...	...	...

Here, checking $\sim$ distributively will require the domains of the two quantifiers to be disjoint.

$$\overbrace{\text{Every TGB}^{1}\ [t_1 \text{ likes } \underbrace{\text{his}_1 \text{ mom}}_{2}].}^{5}\ \overbrace{\text{Every FGB}_{\text{F}}{}^{3}\ [t_3 \text{ likes } \underbrace{\text{HIS}_{\text{F},3} \text{ mom}}_{2\sim 4}].}^{5\sim 6}$$

a	mom a	d	{mom a, mom d}
b	mom b	e	{mom b, mom e}
c	mom c	f	{mom c, mom f}
...	...	...	...

$$\underbrace{\text{Every TGB}^{1}\ [t_1 \text{ likes his}_1 \text{ mom}].}_{2}\ \underbrace{\text{Every FGB}_{\text{F}}{}^{3}\ [t_3 \text{ likes his}_3 \text{ mom}].}_{2\sim 4}$$

Here, checking $\sim$ distributively will require the domains of the two quantifiers to be disjoint.

(45) Every TGB^1 [t_1 likes $\underbrace{\text{his}_1\ \text{mom}}_{2}$]. *Every $\text{FGB}_F{}^3$ [t_3 likes $\underbrace{\text{HER}_{F,2}}_{2\sim 4}$].

a	$\lambda_g \text{mom}\, g_1$	d	$\{\lambda_g\, g_2, \ldots\}$
b	$\lambda_g \text{mom}\, g_1$	e	$\{\lambda_g\, g_2, \ldots\}$
c	$\lambda_g \text{mom}\, g_1$	f	$\{\lambda_g\, g_2, \ldots\}$
...	...	...	...

Paycheck pronouns involve anaphora to an *intension* (Charlow 2017).

Congruence is satisfied, but Contrast cannot be.

(45) Every TGB[1] $[t_1$ likes $\underbrace{\text{his}_1 \text{ mom}}_{2}]$. *Every $\text{FGB}_F{}^3$ $[t_3$ likes $\underbrace{\text{HER}_{F,2}}_{2\sim 4}]$.

a	$\lambda_g \text{mom}\, g_1$	d	$\{\lambda_g \text{mom}\, g_1, \ldots\}$
b	$\lambda_g \text{mom}\, g_1$	e	$\{\lambda_g \text{mom}\, g_1, \ldots\}$
c	$\lambda_g \text{mom}\, g_1$	f	$\{\lambda_g \text{mom}\, g_1, \ldots\}$
...	...	...	...

Paycheck pronouns involve anaphora to an *intension* (Charlow 2017).

Congruence is satisfied, but Contrast cannot be.

Wrapping up

The arguments on assignment-sensitivity can be reproduced for context-sensitivity:

(46) (I'm the best.) No, I_F am!

(47) (I ran a marathon.) Yes, you did.

But there is a striking disanalogy in world-dependency:

(48) In '92 the president was a Bush. #In '04 [the PRESIDENT]$_F$ was a Bush.

My argument is that we contrast *meanings*. We have seen ample evidence that the meanings of pronouns (and now indexicals) saturate the assignment (context).

Data like (48) suggest that the *meaning* of the DD is λ_w pres w. More generally:

$$[\![\alpha]\!]^{c,g} = \ldots \lambda_{(w,t)} \ldots \qquad \text{not} \qquad [\![\alpha]\!]^{c,g,(w,t)} = \ldots$$

Ellipsis *sites* exhibit variable-like behavior. Subject to sloppiness:

(49) When John has to cook, he doesn't want to (cook).
When he has to CLEAN, he doesn't (want to clean) either.

(50) John bought the books$_1$ he was supposed to (buy t_1).
But he READ the books$_2$ he WASN'T (supposed to read t_2).

Strongly suggests that an anaphora-like process undergirds ellipsis resolution (perhaps anaphora to syntax!). How else can we get covarying alternatives?

But anaphora is a relation based on *strict identity*.

Gardent (1991), Hardt (1994, 1999), Schwarz (2000), Tomioka (2008), Elbourne (2008).

There are theories on which ellipsis isn't anaphora, but wherein ellipsis licensing has an anaphoric component, even as *E* is syntactically represented (Merchant 2001).

$$[\![\text{v[E]}]\!]^g := \lambda_P \begin{cases} P \text{ if } P \text{ is E-given} \\ \text{undefined otherwise} \end{cases}$$

In rebinding configurations this can *only* be satisfied with meaningless co-indexing!

(51) Newt $\underbrace{\text{likes her}_1 \text{ cat}}$ and CALLY_F [1 t_1 does $\underbrace{\text{(like her}_1 \text{ cat)}}$] too.

If meaningless coindexing isn't a worry, we can entertain LFs like this again.

As I've hinted, I think a dynamic architecture is important to the analysis of $\sim$. But in dynamic systems, coindexing can mean overwriting an existing value:

$$\boxed{\mathrm{m} \;\big|\; \text{likes}\,(\text{cat}\,\mathrm{m})} \longmapsto \boxed{\mathrm{c} \;\big|\; \text{likes}\,(\text{cat}\,\mathrm{m})}\ \boxed{\{\text{likes}\,(\text{cat}\,\mathrm{c})\}}$$

But sloppy readings don't prevent us from referring back to the initial value for 1. Solved with a slightly enriched representation of context, *referent systems*:

$$\underbrace{\begin{array}{rcl} & & \\ 2 & \mapsto & c \\ & & b \\ 1 & \mapsto & a \end{array}}_{r} \qquad \underbrace{\begin{array}{rcl} 1 & \mapsto & d \\ 2 & \mapsto & c \\ & & b \\ & & a \end{array}}_{r^{1 \mapsto d}}$$

Vermeulen (1995), Groenendijk, Stokhof & Veltman (1996), Nouwen (2007)

Eagle-eyed audience members may have noticed NMC problems seem suspiciously like an artifact of a weakness in the $\sim$-theory:

(52) Newt $\underbrace{\text{likes her}_1\ \text{cat}}$ and CALLY$_F$ [1 t_1 does $\underbrace{\text{(like her}_1\ \text{cat)}}$] too.

While $\cong$ is incorrectly satisfied for the VPs, it is *not* for the sentences: the second sentence's focus value contains propositions of the form *x* likes *x*'s cat.

True enough, and it's a little surprising how far a strengthened $\sim$ (one that prefers larger nodes, akin to GIVENness) would take you. But it cannot be the whole story:

(53) Cally [1 t_1 said $\underbrace{\text{she}_1\ \text{left}}$] but $\underbrace{\text{she}_1\ \text{DIDN'T}_F\ \text{(leave)}}$.

Truckenbrodt 1995, Schwarzschild 1999, Wagner 2006, 2012, Büring 2008, 2016

Indices matter a lot less for ellipsis and deaccenting than you might have thought.

They help us determine values for variables. But it's the *values* that are important.

Entails a radical simplification of grammar (e.g., no NMC), potential for strict identity-oriented theories of ellipsis, and offers a fresh perspective on some old facts (Kennedy's puzzle, focused bound pronouns).

Thank you for listening

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